

6.4 CONTINUOUS WIND MEASUREMENT IN THE TROPICAL PACIFIC USING VHF RADARS

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VHF Radar Wind Profilers are being installed on two tropical Pacific islands to continuously monitor winds aloft for many years. The islands are:

Ponape, East Caroline Islands (158°E, 7°N)

Christmas Island, Republic of Kiribati (157°W, 2°N)

One purpose of this experiment is to study wind fluctuations on time scales between minutes and days, to determine the longitudinal character of these fluctuations, and to examine their relationship to climate variability. A second purpose of the experiment (Christmas Island only) is to provide six-hourly wind profiles via satellite to the scientific community for Project TOGA (Tropical Ocean Global Atmosphere).

The Ponape wind profiler has been operating for fourteen months using only a vertically directed antenna. A multibeam system will be installed later this year.

The Christmas Island radar has just been installed and will be placed in full operation soon. This system will have three antenna beam positions, and will continuously measure the total wind vector. It will be the first wind profiler to provide satellite-transmitted data to a data dissemination center.

Both systems will operate in the low VHF band (≈ 50 MHz), have 100 m x 100 m COCO antenna arrays, and have a peak transmitted pulse power ≈ 30 -50 kW.